EXCELLENCE IN IMAGING

- LFS Scintillation Crystals
- LFS Arrays
- MAPD Solid State Photodetectors
LFS SCINTILATION CRYSTALS

Zecotek’s LFS scintillation crystals are distinguished by their combined high light yields and ultra-fast decay constant, covering a wide range of emission wavelengths, that set them apart from other industry contenders.

“FAST DECAY TIME AND COMPETITIVE PRICING, ZECOTEK OFFERS AN IDEAL SOLUTION.”

The LFS superlative light yield (80-85% -NaI scale) and ultra-fast decay constants (33-36 ns) set them apart from other industry contenders. The superior radiation hardness of our LFS crystals also make them ideally suited for many types of high-energy physics experiments and other applications associated with high levels of ionising radiation.

<table>
<thead>
<tr>
<th>SPECIFICATIONS</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density (g/m3)</td>
<td>7.35</td>
</tr>
<tr>
<td>Effective Atomic Number</td>
<td>64</td>
</tr>
<tr>
<td>Attenuation Length (cm)</td>
<td>1.15</td>
</tr>
<tr>
<td>Decay Constant (ns)</td>
<td>33-36</td>
</tr>
<tr>
<td>Maximum Emission (nm)</td>
<td>425</td>
</tr>
<tr>
<td>Light Yield (ph/MeV)</td>
<td>37K-38K</td>
</tr>
<tr>
<td>Refractive Index</td>
<td>1.81</td>
</tr>
<tr>
<td>Energy Resolution 137 Cs (%)</td>
<td>8</td>
</tr>
<tr>
<td>Radiation Hardness (rad)</td>
<td>&gt;10^6</td>
</tr>
<tr>
<td>Hygroscopicity</td>
<td>No</td>
</tr>
<tr>
<td>Hardness (Mohs)</td>
<td>5.8</td>
</tr>
<tr>
<td>Cleavage</td>
<td>None</td>
</tr>
</tbody>
</table>

for more detailed information, white papers and to request samples or place an order be sure to visit us online.

www.zecotek.com
info@zecotek.com
WHAT MAKES OUR ARRAYS DIFFERENT?

Traditionally arrays are assembled by hand. Fabricated from individual elements, wrapped and organized one at a time into a matrix of desired dimensions, this technique is costly, time consuming and leaves large margins for error and misalignment.

One of the keys to achieving higher resolution and in general more accurate and precise results from your imaging setup is correct matching of array to detector. With our specialized automated process, arrays can now be assembled robotically with greater accuracy, repeatability and uniformity.

Our arrays are produced in a fraction of the time required by traditional processes, are more cost effective and have better detector matching characteristics. Zecotek invites you to experience improved turn around time, lower cost and higher accuracy with our unique LFS scintillation crystal arrays.

AUTOMATED PROCESS  QUICK TURN AROUND  ACCURATE RESULTS UNIFORM ARRAYS
THE NEW WAVE IN SOLID STATE DETECTORS

MICRO-PIXEL AVALANCHE PHOTO DIODES (MAPD)

Zecotek’s detectors incorporate our break-through technology that dramatically improves linearity and allows for very tight timing resolution by providing fast pulse rise time and low jitter. Together with our new scintillation material LFS, Zecotek’s photo-detectors provide a powerful platform for medical imaging applications relying on gamma-ray detection, such as PET scanning, offering significant benefits to the industry.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>MAPD</th>
<th>MAPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective Photosensitive Area</td>
<td>mm²</td>
<td>3x3</td>
<td>3.7x3.7</td>
</tr>
<tr>
<td>Pixel Density</td>
<td>pix/mm²</td>
<td>1600</td>
<td>5000</td>
</tr>
<tr>
<td>Number of Pixels</td>
<td>pix/device</td>
<td>14,400</td>
<td>45,000</td>
</tr>
<tr>
<td>Package</td>
<td>-</td>
<td>Met / Cer</td>
<td>Met / Cer</td>
</tr>
<tr>
<td>Window Material</td>
<td>-</td>
<td>Epoxy</td>
<td>Epoxy</td>
</tr>
</tbody>
</table>

*Electrical & optical characteristics (T=25 °C, V=V_{op})*

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>MAPD</th>
<th>MAPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spectral response range</td>
<td>nm</td>
<td>320-900</td>
<td>320-900</td>
</tr>
<tr>
<td>Peak sensitivity wavelength</td>
<td>nm</td>
<td>450</td>
<td>450</td>
</tr>
<tr>
<td>Photon detection efficiency</td>
<td>%</td>
<td>65</td>
<td>55</td>
</tr>
<tr>
<td>Dark Count</td>
<td>kcps</td>
<td>Max 1500</td>
<td>Max 1500</td>
</tr>
<tr>
<td>Crosstalk Probability</td>
<td>%</td>
<td>Max 10</td>
<td>Max 10</td>
</tr>
<tr>
<td>Terminal Capacitance</td>
<td>pF</td>
<td>120</td>
<td>140</td>
</tr>
<tr>
<td>Gain</td>
<td>-</td>
<td>1.7 x 10^6</td>
<td>7 x 10^5</td>
</tr>
<tr>
<td>Breakdown Voltage</td>
<td>V</td>
<td>70</td>
<td>70</td>
</tr>
</tbody>
</table>
ABOUT ZECOTEK

Zecotek Photonics Inc. (TSX-V: ZMS; Frankfurt: W11) is a photonics technology company commercializing high-performance scintillation crystals, photo detectors, positron emission tomography scanning technologies, 3D auto-stereoscopic displays, 3D printers and associated materials for applications in medical, high-tech and industrial sectors.

Founded in 2004, Zecotek operates three divisions: Imaging Systems, 3D Technology Systems, and Optronics with labs located in Canada, Korea, Russia, Singapore and U.S.A. Our strategic alliances and joint ventures include leading industry partners such as Hamamatsu Photonics (Japan), the European Organization for Nuclear Research (Switzerland), the University of Washington (United States), Beijing Opto-Electronics Technology Co. Ltd. (China), NuCare Medical Systems (South Korea), and National NanoFab Center (South Korea).

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